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Science and Weapons Daily Review

Tuesday
5 June 1984

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USSR: ENHANCED SPACE LIGHT MODULATOR FOR HIGH-TECHNOLOGY OPTICAL PROCESSORS (C)

An unclassified article submitted for publication in September 1983 described a Soviet modified spatial light modulator that has enhanced sensitivity; optical spatial light modulators are critical to the development of real-time optical information processors, which have great potential in performing the complex mathematical operations required by complex sensor systems, such as phased-array radars and underwater acoustic arrays. (C NF)

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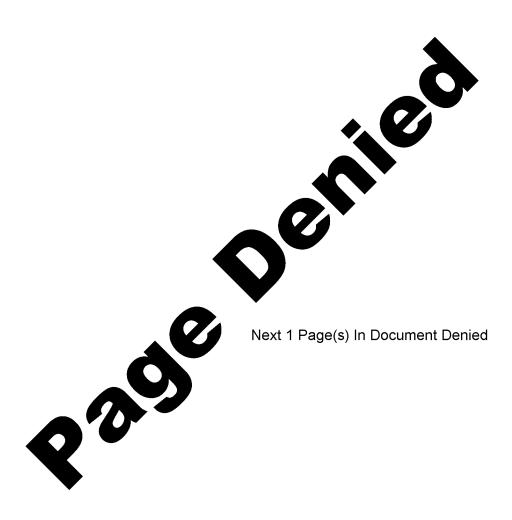
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5	USSR: ADVANCES IN SIGNAL PROCESSING AND BIPOLAR FABRICATION TECHNOLOGIES	 25X′
	A recent Soviet export journal describes a Soviet 8x8 bit digital multiplier chip; the existence of the chip has caused us to change significantly our previous estimates of Soviet bipolar integrated-circuit technology, as well as Soviet digital signal processing	
	capabilities.	25X1
7	USSR: SCIENTIFIC DISCOVERY USED IN THE MANUFACTURE OF REFRACTORY MATERIALS (U)	
	A recent Soviet article stated that "the phenomenon of wave localization of self-inhibiting solid-phase reactions" had been registered as a discovery; the discovery is used in the manufacture of refractory materials with military application in armor, engines, heat shields, and structural	25X1
	materials.	23 X I

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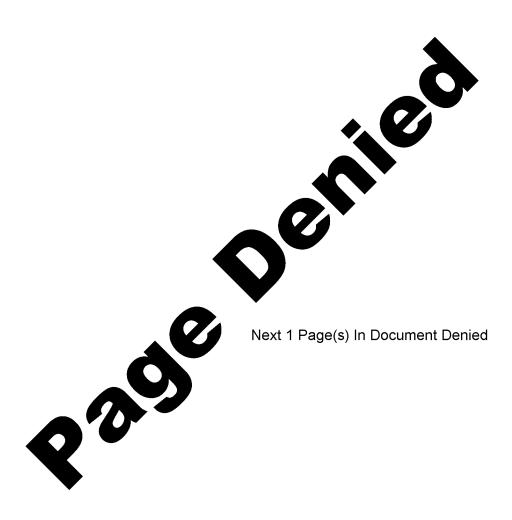


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USSR:	ENHANCED SPACE LIGHT MODULATOR FOR H PROCESSORS	IGH-TECHNOLOGY OPTICAL	25 X 1
	In an unclassified article submitted September 1983, four Soviet scientist described a modified "Preobrasovatel spatial light modulator (SLM) that ha The PRIZ SLM was enhanced by doping to crystal, from which the PRIZ is produced and the spatial by	s from Novosibirsk Izobrazheniy" (PRIZ) s enhanced sensitivity. he bismuth silicate ced, with tin. The tin	25X1
	According to the article, the PRIZ SL from tin-doped crystals are 60 times those that are produced from undoped sensitivity of the devices produced w material is 80 nanojoules per square	more sensitive than crystals. The reported ith the tin-doped	25 X 1
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	Comment:		25 X 1
			20/(1
	The improved PRIZ probably will allow fabricate more complicated optical pr would have been possible with the old High-sensitivity SLMs are especially that require a series of mathematical operations cause losses in the optical several optical devices often are plant.	ocessing networks than er version of the PRIZ. important in systems operations. Such I signal because ced in a series to	
	perform complex operations. The enha probably can at least partially compe The improved PRIZ may require a lower	nsate for these losses.	

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which in turn reduces electrical power, weight, and volume requirements.	25X1
The PRIZ was invented by the Soviets around 1979 and was a technological surprise to the West.	25X1
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USSR:	SCIENTIFIC DI MATERIALS	SCOVERY USED IN	THE MANUFACTU	JRE OF REFRACTORY	25 X 1
	localization o been judged a State Register identified as Sciences; I. B and V. Shkiro,	f self-inhibitin discovery and en . The authors o	g solid-phase tered as numb f the discove ctor of Physi didate of Che te of the USS	per 287 in the ery were ical-Mathematical emical Sciences:	25X1
	Comment:				
	manufacture of stable at high corrosion. Po	nthesis (Russian refractory mate temperatures, h tential military ude armor, engin	acronym SVS) rials that ar ard, and resi applications	st wear and for these	25X1
	structural mate	eridis.			25X1
	degrees is the reaction. A position of liberation of lunreacted powder centimeters per degrees Celsius	neat produced in lting temperature basis of SVS. when ignited at content with the hear as a combustic second and at a second and results. The end results he material to a	e to rise by An example is f two or more one end. The at propagating wave moving temperature of the pro	e elements is result is the g along the g at 2.5 to 15 of 1400-3500 ecess is the	25X1
	expensive equip theoretical der	nd SVS attractive es because there oment to obtain on a sity. Additional econds) and there	is no need o crack-free pr ally, the syn	f complex and	
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The Soviets have synthesized over 200 compounds, primarily involving metal and non-metal reactions although metal-metal non-metal-non-metal reactions also have been studied. The Soviets also are using SVS in commercial applications SVS-produced titanium nickelide is being used in aircraft fuel lines and SVS titanium carbide is being used as an abrasive.	tal
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